ENGINEERING MAINTENANCE BRANCH BULLETIN

Issue # 005 **September 2005**

THIS MONTH'S BULLETIN CONTAINS:

This is the monthly bulletin to MSC ships and shoreside personnel. The purpose of the bulletin is to inform all concerned of current COMSC Preventive Maintenance management practices associated with any new or revised policy and procedures, along with helpful tips & tricks for improved maintenance. The bulletin will also discuss and present any upcoming initiatives in the various programs.

Some may remember "*The Vibe Monitor*", a newsletter that was run up until 2000 by DLI Engineering. To continue our efforts to bring you useful information, we've added a new page to the newsletter, completely dedicated to the Vibration Monitoring System (VMS). This will have useful tips as well as past case histories.

Engineering Maintenance Branch Website – something old is new again!!

The Engineering Maintenance Branch web page has had a bit of a facelift; along with some helpful downloads (SAMM, PENG, EASy overviews, OAS Guide, past issues of our bulletin, etc.), the latest CMEO Class information and who to contact for questions or comments regarding Engineering. Maintenance. For helpful updates, keep checking it out!
http://www.msc.navy.mil/n7/engmgmt/engmgmt.htm

WANTED… MORE PICTURES!!

It is said, "If you send it, we'll print it!" Let's prove it right. If you have pictures of Shipboard Maintenance (Vibration Monitoring, Oil Sampling, machinery upkeep, etc.) being performed, or a visit from a SAMM or VMS Tech Rep, please send them (along with a *brief* narrative as to what the picture is) to Norm Wolf (e-mail: Norman.wolf@navy.mil).

SAMM/Maintenance Tips

Running Hours: Running hours are critical for the scheduling of running hour based maintenance. Before the schedule is run ensure that all the correct hours are input into the Utilities/Run Hours module. If 'parent' equipment shows in the Run Hours module, indicated by a yellow folder all the 'child' equipment in that folder will have its running hours incremented by the same increment as the parent equipment, or you can update the child equipment by alone by opening the parent equipment folder.

-Tip provided by Seaworthy Systems Incorporated (SSI)

Maintenance Tip:

A really quick and easy way to detect suspected damage in a small gearbox is to attach a small magnet to the outside of the drain plug, using masking tape. Run the equipment for a short time, drain the oil and examine the gear plug. Any loose bits of ferrous metal will have attached themselves to the now magnetized gear plug giving a quick indication of either gear or bearing failure.

-Tip provided by Steven Dennis, Senior Audit Manager, TfL, London UK

SMARTs and Safety

(By Liem Nguyen, Mechanical Engineer)

Shipboard Material Assessment and Readiness Testing (SMART), is an MSC N711 engineering application first developed in 1996 to provide the inspection team with a computerized method of documenting the results of SMART inspections.

The primary goals of the application are:

1. Improve the efficiency and consistency of Safety data collection.
2. Integrate the Safety data into the SAMM 5.x software system for historical and analytical purposes.
3. Make the final results of the Safety inspection readily accessible to all levels of interest in an electronic format.
4. Utilize existing MSC and Commercial Off-The-Shelf (COTS) programs as much as possible to reduce costs.

The program supports the capturing of inspection data required to develop reports for submission by the SMART inspection team. Originally developed for the SMART inspection group, the application has been modified to support the Contract Quality Assurance (CQA) N75 inspection group and will soon be used by the SAFETY N76 inspection group.

The program provides for the simultaneous collection of inspection results on multiple, separate microcomputer workstations or Personal Data Assistants (PDA) and provides for the consolidation of data collected into a single data store. Engineers working both shipboard and shoreside will be able to benefit from accessing the same distributed database of problems and coordinating their repair.

In the past, SMART/CQA inspections had involved MSC inspectors walking, climbing and crawling around the ships, through engine spaces and other tight quarters, documenting the safety and maintenance needs of the ships on numerous checklists. The checklists were contained in multiple large binders they had to carry with them. Subsequently, they would then manually re-enter their findings into laptop systems they also had to carry onboard with them. With the advent of the Personal Digital Assistant (PDA), data is now collected on site, transferred through an automated means to the inspectors' workstation and developed into deficiencies/findings during the download process. Post download, the inspector merely needs to review/supplement the content of the record to complete the inspection process. An automated replication process handles consolidation of the data between inspector laptops. Once the data is consolidated the senior inspector can provide comprehensive preliminary and final reports using the systems reporting mechanism.

In February of 2003, the CQA group, N75, approached N711 with requirements to support the group's inspection process. For the most part, the existing functionalities were applicable with minor changes to terminology. Working with the N75 group, a number of enhancements to the PDA interface were identified so at to increase the efficiency and speed of data collection on the deck plates. One function, the "Top 20" list, enabled the inspector to configure the system with up to 20 verbose statements that could be added individual or in groups to a finding record with as little as 3 stylus operations. A comparison of the "paper" vs. "electronic" CQA process showed a minimum 60% savings in time/man-hours using the new system.

What's Next?

Starting in August of 2003, the CQA group took the SMART application one step further and began development of a web based "findings" tracking system. The system provides access to all authorized users and permits for the assignment, update and closure of all inspection findings. The web-based application closely mirrors the CQA "cradle-to-grave" process and has greatly contributed to the efficiencies noted above.

The success of this project leads to further modification of the SMART application to support the N76 Safety inspection group. The application should be ready for the Safety inspectors to use in the beginning of CY 2006.

If you have any questions or comments, please contact the author at Liem.nguyen@navy.mil or 202-685-5969.

Question of the Month: SMART Items in SAMM?

(By William S. Carroll & Norm Wolf)

Question? What are these Work Requests generated by the SAMM system after a SMART Inspection? How does this impact shoreside?

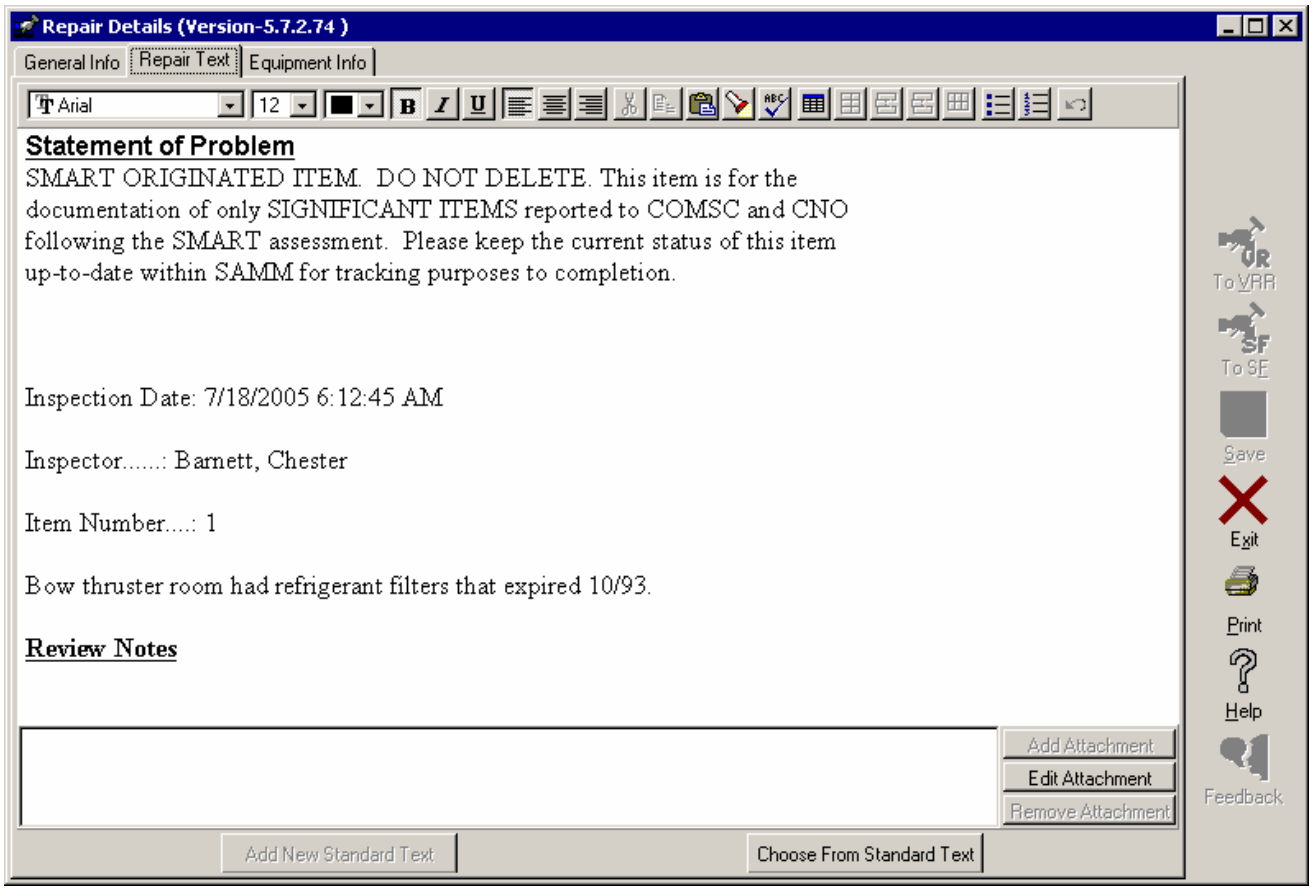
The significant findings during a Shipboard Material Assessment and Readiness Testing (SMART) Inspection are transferred to SAMM from the SMART System as Work Requests (see example below). These items are entered to allow the Chief Engineer to assign these items to Engineers as a Ship's Force Work List (SWFL) item, or request assistance from shoreside as a Voyage Repair Request (VRR).

As with all SWFLs and VRRs the Chief Engineer should update the status regularly and close the item out when done – including history comments. If there is feedback regarding the significant item, enter it as a normal maintenance feedback. The Maintenance Management Branch will track it, until a satisfactory response is obtained.

Shoreside Tracking

The data from the SAMM System is used for historical information on these significant items. It answers the questions of "Is it still an open item?" and "What was done to complete and close out the item?" Typically, the SMART Inspection team prior to the next SMART Inspection views this information.

For more information, or if you have any questions/comments, contact Liem Nguyen (Liem.Nguyen@navy.mil) or Will Carroll (William.s.carroll@navy.mil).



CMEO Training – What Are YOU Waiting For????

CMEO (**C**ivilian **M**arine **E**ngineering **O**fficer) is a two-week training course (held *quarterly*) at the Naval Supply Corps School in Athens, GA. It is for both shipboard and shoreside engineers. The Engineering Directorate (Code N7) of Military Sealift Command hosts the course and encourages ***ALL*** MSC Engineers (3rd A/Es through Chief Engineers, as well as Port Engineers and Project Engineers) to attend *(**Note:** MSC shipboard engineers are given priority when classes are full).*

CMEO provides training on an array of topics such as: SAMM (MALIN, Logbook, etc.), Vibration Monitoring, Lube Oil, Fuel Oil (NEURS), Chemicals (boiler treatment, sewage treatment, etc.), Supply (COSAL, ShipCLIP), Environmental, and Safety. SAMM is interactively taught using actual data and each module is discussed extensively.

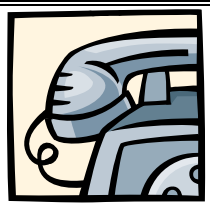
Upcoming CY '05 class dates:

- December 05-16, 2005

Upcoming CY '06 class dates:

- Jan 23-Feb 3, 2006
- April 17-28, 2006
- July 10-21, 2006
- December 04-15, 2006

For further information and to sign up, please go to the CMEO website (http://63.219.124.12/cmeoclasssignup/cmeo.htm), or contact Dave Greer (david.greer1@navy.mil) with any questions.



Hello? It's for YOU!

This is designed to help *YOU* by providing useful information. Feedback is *ESSENTIAL* to making this a helpful bulletin to all shipboard personnel in doing your job "smarter not harder". Please pass on any and all feedback from your Engine Department.

We do want this to be ***YOUR*** Maintenance Management Bulletin. What we don't want is to give you more junk mail. If there's a SAMM or Maintenance tip, topic, question, suggestion, or comment on how to make this useful, or something relating to Engineering Maintenance you think should get out to the ships, please pass it on. Send your submission to Randy Torfin (randel.torfin@navy.mil) *OR* Norm Wolf (norman.wolf@navy.mil).

COMING UP FOR NEXT MONTH!

Oil Analysis System (OAS) Process

New SAMM/Maintenance Tips!

Another Question of the Month

Vibration Monitoring Tips & Information

N711 – Points of Contact:

Branch Chief – Randy Torfin, (202) 685-5744 (Randel.Torfin@navy.mil);

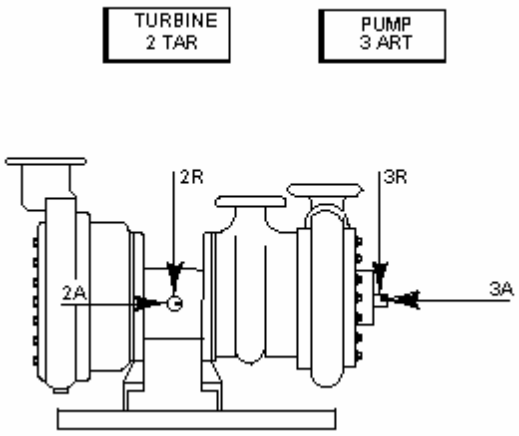
Sr. Mechanical Engineers – Will Carroll, (202) 685-5742 (William.S.Carroll@navy.mil) & Norm Wolf, (202) 685-5778 (norman.wolf@navy.mil);

Mechanical Engineers – Liem Nguyen, (202) 685-5969 (liem.nguyen@navy.mil) & Andrew Shaw, (202) 685-5721 (andrew.shaw@navy.mil);

Electrical Engineer – David Greer (202) 685-5738 (David.Greer1@navy.mil)

Case Study – A Good Save On The Kilauea

(Updated, from *The Vibe Monitor*, Winter, 1999)

CASE HISTORY	
SHIP: USNS Kileaua T-AE-026	
MACHINE: MAIN FEED PUMP #2	

The #2 main feed pump on the Kileaua is a 312 horsepower Coffin turbine driven single stage centrifugal pump. This unit was overhauled in 1995 and then worked on by a technical representative in 1996 to correct a problem with the attached oil pump. In early 1998, the Vibration Monitoring System (VMS) identified a serious turbine bearing problem. The first engineer used the #1 feed pump for the spring and most of the summer. During a support visit in July 98, a DLI engineer took some data on the #2 feed pump as a training evolution with newly reported aboard third engineer Todd Berg. A significant harmonic series of peaks in the spectra with a fundamental frequency of 5.57 times shaft rotation rate were a classic sign of abnormal rolling contact bearing wear. The Expert system in VMS compared the vibration data to a fleet average for that model of Coffin pump and applied the Expert System rule-base to diagnose the bearing wear and assign its severity. The severity level was higher in July than it was in February indicating that the wear was progressing. Because it was serious and also increasing in severity, the proper maintenance action was to replace the bearings.

The Ship was able to schedule the bearing replacement during the September 98 availability in Guam Shipyard. When the machine was opened up, the 1 A/E asked that the shipyard save the bearings so they could be inspected. The bearing inspection conclusion was that one of the turbine bearings was badly worn with only a minimum amount of life left.

The VMS software used order-normalized spectra taken in three axes from one location on the turbine and one location on the pump. The vibration was measured while the #2 feed pump was in a normal lineup providing feed water to the boiler. Due to the high ambient noise and the lagging around the unit, the excess vibration caused by the bearing wear was not obvious to the feed pump watchstander. Without the VMS program, the fault would have likely gone to failure causing collateral damage. In this case, the cost of repair would have been significantly more than the bearing replacement.